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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/576,756	04/21/2006	Keiji Shigesada	Q94144	6027
23373 7590 12/21/2009 SUGHRUE MION, PLLC 2100 PENNSYLVANIA AVENUE, N.W. SUITE 800 WASHINGTON, DC 20037				
EXAMINER				
DOE, SHANTA G				
ART UNIT		PAPER NUMBER		
1797				
NOTIFICATION DATE		DELIVERY MODE		
12/21/2009		ELECTRONIC		

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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Office Action Summary

Application No.

10/576,756

Applicant(s)

SHIGESADA ET AL.

Examiner

SHANTA G. DOE

Art Unit

1797

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 April 2006.
2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-23 is/are pending in the application.
4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☒ Claim(s) 6-11 and 18-23 is/are allowed.
6) ☒ Claim(s) 1-5 and 12-17 is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
10) ☒ The drawing(s) filed on 21 April 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB-06)
Paper No(s)/Mail Date 4/21/2006
4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date _____
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____

DETAILED ACTION

Claim Rejections - 35 USC § 102

1. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

2. Claims 1-4 & 12-17 are rejected under 35 U.S.C. 102(b) as being anticipated by Moring et al (US 6,159,368).

Regarding claim 1, Moring discloses a cartridge ((12) called minicolumn of a column plate) for nucleic acid separation and purification which comprises: a cylindrical main body formed of a cylindrical part (12) and a bottom part having an opening; and a nucleic acid-adsorptive porous membrane (8) held on the bottom part, a rim part of the nucleic acid-adsorptive porous membrane being held by a molding material forming the cylindrical part of the cylindrical main body (col. 12 lines 6-7 states that the device is made by injection molding and col. 16 lines 35-42 states that filter element is compressed between the shoulder and rim 16a in a manner effective to secure the filter element in place and to press the circumferential side edge against the inner surface of the column) which cartridge is produced by: inserting a bottom member and the nucleic acid-adsorptive porous membrane into a cavity of an injection molding die wherein the nucleic acid-adsorptive porous membrane is placed in the bottom member providing the

bottom part which is one of two parts that sandwich and hold the nucleic acid-adsorptive porous membrane; and injecting the molding material into the cavity to form the cylindrical part of the cylindrical main body wherein a portion forming the cylindrical part which is the other of the two parts that sandwich and hold the nucleic acid-adsorptive porous membrane is integrated with the bottom member while the nucleic acid-adsorptive porous membrane is sandwiched and held between the cylindrical part and the bottom part (see abs, fig 4-6, col.4 lines 12- 15, 47-49, 65- col. 5 line 5; col. 6 lines 15-20 ,col. 12 lines 6-7; col. 15 – col. 17).

Regarding claim 2, Moring discloses the cartridge for nucleic acid separation and purification according to claim 1, wherein the bottom member further comprises a cylindrical discharge part (see fig 4&5. the end part of funnel shaped piece of (16)) communicating with the opening of the bottom part.

Regarding claim 3, Moring discloses the cartridge for nucleic acid separation and purification according to claim 1, wherein the rim part of the nucleic acid-adsorptive porous membrane is held and compressed by injection pressure of the molding material forming the cylindrical part of the cylindrical main body (see fig -6, col. 12 lines 6-7, and col. 16 lines 35-42) .

Regarding claim 4, discloses the cartridge for nucleic acid separation and purification according to claim 3, wherein the rim part of the nucleic acid-adsorptive porous

membrane is compressed until voids in the membrane disappear (see fig 4-6; col. 16 lines 35-56).

Regarding claim 12, Moring discloses a cartridge for nucleic acid separation and purification comprising a cylindrical body with a first opening (top opening in 12) and a second opening (opening covered by filter 8a, see fig 3 -6) and having a nucleic acid-adsorptive porous membrane (filter 8) held in the cylindrical body, in which separation and purification of nucleic acid are conducted by passing a sample solution containing nucleic acid by pressurized gas from the first opening to the second opening to allow the nucleic acid to be adsorbed to the nucleic acid-adsorptive porous membrane, wherein: the cylindrical body comprises: a cylindrical main body having a bottom part supporting the nucleic acid-adsorptive porous membrane (8); and a discharge part (16 c) connecting a bottom part opening formed in the bottom part and the second opening; the bottom part has a bottom face (16a) and a plurality of protrusions (58a, 58b & 58c) formed on the bottom face; at least a part of a top part of each protrusion supports the nucleic acid-adsorptive porous membrane (see fig 6); and a closer portion of the nucleic acid-adsorptive porous membrane to the bottom part opening is made more displaced towards the discharge part during use (see abs, fig 3-6, col.4 lines 12-15, 47-49, 65- col. 5 line 5; col. 6 lines 15-20, col. 12 lines 6-7; col. 15- col. 17).

Regarding claim 13, Moring discloses the cartridge for nucleic acid separation and purification according to claim 12, wherein the plurality of protrusions (58a, 58b & 58c) are a plurality of ribs radially extending from the bottom part opening (see fig 6).

Regarding claim 14, Moring discloses the cartridge for nucleic acid separation and purification according to claim 13, wherein the top part of the rib is rounded (see fig 6 (58a, 58b & 58c)).

Regarding 15, Moring discloses the cartridge for nucleic acid separation and purification according to claim 12, wherein the bottom face has a slope so that a closer portion of the bottom face to the bottom part opening is displaced more towards the discharge part (16c) (see fig 4 (16b)).

Regarding claim 16, Moring discloses the cartridge for nucleic acid separation and purification according to claim 12, wherein edges and corners present in an inner surface of the cartridge for nucleic acid separation and purification are rounded (see fig 6).

Regarding claim 17, Moring discloses the cartridge for nucleic acid separation and purification according to claim 12, wherein the nucleic acid-adsorptive porous membrane is held with a rim part thereof being compressed (col. 16 lines 35-42).

3. Claims 1 & 2 are rejected under 35 U.S.C. 102(b) as being anticipated by Mori et al (US 2003/0170664).

Regarding claim 1, Mori discloses a cartridge (1) for nucleic acid separation and purification which comprises: a cylindrical main body formed of a cylindrical part (12) and a bottom part having an opening (101); and a nucleic acid-adsorptive porous membrane (30) held on the bottom part, a rim part of the nucleic acid-adsorptive porous membrane being held by a molding material forming the cylindrical part of the cylindrical main body which cartridge is produced by: inserting a bottom member and the nucleic acid-adsorptive porous membrane into a cavity of an injection molding die wherein the nucleic acid-adsorptive porous membrane is placed in the bottom member providing the bottom part which is one of two parts that sandwich and hold the nucleic acid-adsorptive porous membrane; and injecting the molding material into the cavity to form the cylindrical part of the cylindrical main body wherein a portion forming the cylindrical part which is the other of the two parts that sandwich and hold the nucleic acid-adsorptive porous membrane is integrated with the bottom member while the nucleic acid-adsorptive porous membrane is sandwiched and held between the cylindrical part and the bottom part (see abs, fig 1 & 2, [0009], [0017]-[0018], [0031, [0037],[0055],[0069],[0072]-[0073],[0090], [0092]-[0093]).

Regarding claim 2, Moring discloses the cartridge for nucleic acid separation and

purification according to claim 1, wherein the bottom member further comprises a cylindrical discharge part (101) communicating with the opening of the bottom part (see fig 2).

Claim Rejections - 35 USC § 103

4. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

5. The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

6. This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to

consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

7. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Moring et. al (US 6,159,368).

Regarding claim 5, Moring discloses the cartridge for nucleic acid separation and purification according to claim 3, wherein the rim part of the nucleic acid-adsorptive porous membrane is compressed. Moring fails to disclose that the membrane is compressed to a thickness of 10% to 70% of an initial thickness.

However, it would have been obvious to one having ordinary skill in the art at the time of the invention to have the membrane be compressed to a thickness of 10 -70 % of an initial thickness, since it has been held that where the general conditions of a claim are disclosed in the prior art, discovering the optimum or workable range involves only routine skill in the art.

Allowable Subject Matter

8. Claims 6-11 and 18-23 are allowed.

Regarding claims 6 and its dependent claim, the prior art alone or in combination fails to disclose a method for producing a cartridge for nucleic acid separation and purification: the method comprising a step of placing the nucleic acid absorptive porous membrane

on the bottom part provided in the bottom member and placing the bottom member and the membrane in a cavity of an injection molding die; a step of pressing a core pin to the membrane while holding the membrane with a rim part of the membrane protruding from the periphery of an end face of the core pin and closing the injection molding die; a step of injecting a molding material into the cavity forming the cylindrical part of the cylindrical main body and at the same time sandwiching and holding the rim part of the membrane between the molding material and the bottom part and step of removing a casting from the injection molding die.

Regarding claim 18-23, the prior art alone or in combination fails to disclose a cartridge for nucleic acid separation and purification comprising a cylindrical body which comprises a cylindrical main body having a bottom part supporting a nucleic acid-adsorptive porous membrane, and a discharge part connecting the bottom part opening formed in the bottom part and the second opening and a thickness of a part forming the second opening of the discharge part is 0.2mm or more.

The closest prior art to the applicant invention claimed in claims 6-11 and 18-23 is Moring et. al (US 6,159,368).

Regarding claims 6-11, the Moring reference discloses a cartridge for nucleic acid separation and purification where the cartridge comprises a cylindrical main body formed of a cylindrical part and a bottom part having an opening and a nucleic acid

adsorptive porous membrane held on the bottom part wherein the device is made by injection molding (see Moring abs, fig 4-6, col.4 lines 12- 15, 47-49, 65- col. 5 line 5; col. 6 lines 15-20 ,col. 12 lines 6-7; col. 15 – col. 17. However, the reference fails to disclose the specifics of the method by which the device is made and hence the reference fails to disclose the steps of the method as is claimed by the applicant in claim 6.

Regarding claims 18- 23, the Moring reference discloses a cartridge for nucleic acid separation and purification where the cartridge comprises a cylindrical main body formed of a cylindrical part and a bottom part having an opening and a nucleic acid adsorptive porous membrane held on the bottom part wherein the device is made by injection molding, However, the reference fails to disclose that the thickness of a part forming the second opening of the of the discharge part is 0.2 mm or more.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to SHANTA G. DOE whose telephone number is (571)270-3152. The examiner can normally be reached on Mon-Fri 8am-5pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Walter Griffin can be reached on 571-272-1447. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

GSD

/Walter D. Griffin/
Supervisory Patent Examiner, Art Unit 1797